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ABSTRACT

A specially designed unit that provided feedback about voice volume was used to lower the voice volume in six mildly retarded adults. The apparatus indicated by color of lights when volume was too loud, too soft, or optimal. Praise was given in different schedules: for every sentence that met criterion, every three sentences, or an average of three sentences, every 10 seconds of criterion responding, or an average of 10 seconds. Case managers' evaluations were also examined. Improvement in one or more of the dependent variables was noted for all Ss, and reduction in voice volume was reliable and relatively permanent, as corroborated by case managers. Significant differences were revealed in time-on of lights indicating overly loud and overly soft voices. (CL)

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Decreasing Speech Volume of Mentally Retarded Adults Using Feedback and Verbal Reinforcement

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There is a high incidence of language disorders reported among the retarded (Snyder, Lovitt & Smith, 1975). Research efforts with this population using techniques of operant conditioning have demonstrated positive results on a number of target behaviors (Hopkins, 1968; Garcia, Guess & Byrnes, 1973; Daniels & Hansen, 1976; Morris & O'Neill, 1976; Weisbord, 1976). Since voice volume has been shaped using feedback apparatuses in normal populations (Holbrook & Meador, 1969; Moor & Holbrook, 1971), similar methods need to be investigated in the retarded. This study was designed to test the hypotheses that adult mentally retarded females could learn to speak at normal voice volumes (approx. 75dB) if given appropriate feedback, and that this skill would be generalized to the daily setting of the volunteers. Several different reinforcement schedules were tested using verbal praise to evaluate any differences that might be produced by them.

METHOD

Six females, ranging in age from 22 to 46 years, with IQs between 45 and 74, were selected because they could read at the second-grade level and were rated by their case managers as among those whose normal conversation volume were excessive and as being susceptible to training. A specially designed unit was used. It consisted of circuitry that provided feedback about voice volume that was too loud (red light), too soft (blue light), or optimal (green light), as sensed by a microphone connected to it.

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Digital timers automatically recorded number of seconds that the red and green lights were on. Pre- and post-test evaluations of intensity in decibels and from case managers were collected for each volunteer. Each participant was assigned a different reinforcement schedule (CRF, FR, VR, FI, VI, or Feedback Only); all received visual-binary feedback from the apparatus described above. Baseline data were collected prior to beginning the training trials by having each participant read through a set of 15 sentences three times; no feedback was given. Following baseline collection the participant was informed of the goal of the training and the apparatus was demonstrated. A criterion of keeping the green light on for 70% of the time taken to read each sentence was chosen as the target response for reinforcement. Praise was given for every sentence that met the criterion (CRF), every three sentences (FR), or an average of three sentences (VR), every 10 sec of criterion responding (FI), or an average of 10 sec (VI). Praise was always given after a sentence was completed, to avoid interruptions. VR and VI schedules were obtained from a random number table. Ten training sessions, three trials (15 sentences/trial) per session, were given over a two-week period. The followup sessions, identical to the baseline session, were given five and 12 days after the completion of training. Case managers' evaluations were gathered on both of these days also.

RESULTS

Improvement in one or more of the dependent variables was observed for all of the participants. The reduction in voice volume as a result of training was reliable and relatively permanent, and was directly observable in the majority of the participants, as judged by their case managers. ANOVAs of Subjects across Trial Blocks (see Tables 1 and 2) revealed significant differences in time-on of both green and red lights. It was

easier for most participants to keep the red light off than the green light on. The different schedules did not produce markedly differing response rates. Voice volumes in dB was significantly lower between the Baseline and 12-day Followup ($t(5) = 3.73$, $p = .007$). Case managers' evaluations agreed with the volume results ($t(5) = 2.49$, $p = .03$).

DISCUSSION

The study provides evidence that voice volume changes can be acquired and maintained by adult retarded females. They are able to respond to contingent feedback with or without accompanying verbal reinforcement. Since the primary purpose of praise was most likely to sustain interest and motivation, other methods of achieving that state should be investigated. The possibility of the individual's learning the same skill by autoshaping for a reward for reaching some criterion at the end of each session is a distinct possibility. The use of the technique presented here, if replicated, can become an important additional factor in helping the retarded citizen to achieve and maintain an important social skill.

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TABLE 1

Mean Number of Seconds of Green Light On for Each Trial Within a Session[1]

Subject/ Schedule	Baseline	Training		Followup	
		1 - 5	6 - 10	5	12
FB Only	35.5	33.3	33.0	28.7	
CRF	16.5	22.8	20.9	17.0	
FR	39.0	34.6	28.6	28.8	
VR	19.8	19.5	18.4	15.4	
FI	20.2	22.3	18.6	16.5	
VI	15.0	16.7	16.5	15.3	
Total	146.0	149.2	136.0	121.7	

[1] $F(3,15) = 4.59$, $p = .02$

TABLE 2

Mean Number of Seconds of Red Light On for Each Trial Within a Session[1]

Subject/ Schedule	Baseline	Training		Followup
FB Only	6.0	0.84	0.76	0.50
CRF	10.0	2.14	1.40	1.75
FR	17.0	4.60	5.90	9.00
VR	0.2	0.24	3.25	0.80
FI	3.5	1.10	1.50	0.50
VI	0.5	0.28	1.22	2.25
Total	37.2	9.2	14.03	14.80

[1] $F(3,15) = 3.89$, $p = .03$

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